

TRANSPORT FINDINGS

Gender Gaps in Improvements to Shared-Ride Services: Insights from a Shared Mobility Survey

Ipek Nese Sener¹, Austin Sibb¹, Todd Hansen¹¹ Texas A&M Transportation Institute

Keywords: On-demand transportation services, Ridesharing, Gender differences, Shared-mobility survey, Texas

<https://doi.org/10.32866/001c.74249>

Findings

This study analyzed data from a 2022 shared mobility survey to investigate the impact of gender on the potential improvements to on-demand transportation services, particularly shared-ride services such as ridesharing through transportation network companies (TNCs) and microtransit. Results revealed that male respondents were more inclined to opt for financial incentives such as pretax benefits, direct subsidies, and subsidizing certain trips. Employer-related programs such as parking cash-out programs and flexible working hours were also found to be more appealing to male respondents. In contrast, female respondents placed a greater emphasis on safety-related measures, indicating that safety concerns may be too significant for them to overlook, even when presented with financial incentives.

1. Questions

On-demand transportation services allow passengers to book rides, usually through a digital application or platform, at locations and times convenient to them, as opposed to services that only travel between specific locations or follow a strict schedule, such as fixed-route public transit. Some examples include TNCs that connect travelers to drivers using personal vehicles, which can also be provided as a shared service with other unknown passengers as well as microtransit services, which pool passenger trips in shuttles or vans together using real-time routing and scheduling (Hansen and Sener 2022).

While acknowledging that this is an area where more research is needed, earlier studies have provided critical insights into potential reasons for gender differences in opinions and the use of on-demand transportation services. A US-based online survey revealed that females were more likely to abandon ridesharing services, while males were more likely to continue using them, despite an equal likelihood of trying the services between males and females (Morris et al. 2019). According to a study conducted by the National Bureau of Economic Research in Boston, Massachusetts (Ge et al. 2016), some female riders felt their drivers were overly chatty and were attempting to flirt with them. In China, the unwanted sexual attention and higher risk of sexual assault may explain why female TNC service users (through DiDi) perceived more physical risk than male users and were more likely to discontinue the use of the service as a result (Ma et al. 2019). In Karachi, Pakistan, both cisgender and transgender women reported facing sexual harassment and assault in taxis and preferred open vehicles like rickshaws instead (Panjwani 2018). Additionally, transwomen experienced discrimination when using ridesharing services. In

another study focusing on shared taxis in Iran, the fear of abuse and imaginary harassment were found to influence women's transportation-related decisions (Yeganeh et al. 2022).

This study hypothesized that targeted policies and programs that address the needs of different gender groups could incentivize them to adopt shared-ride services, leading to a higher overall rate of adoption. Specifically, the study sought to answer questions such as: What are the specific barriers that prevent different gender groups from utilizing these services, and how can they be overcome? To what extent can policies and programs impact the adoption of shared-ride services among different gender groups?

2. Methods

The primary data used in this study was obtained from an online shared mobility survey conducted early 2022 across 10 Texas cities, including San Antonio, Houston, Dallas, Austin, Lubbock, Denton, Edinburg, Arlington, Bastrop, and Terrell, with all having TNCs and/or microtransit services in operation at the launch of the survey. The survey included questions regarding the individuals and household characteristics, use of various modes of transportation, as well as specific questions related to the on-demand transportation services including trends, attitudes, perceptions, barriers and solutions. The survey targeted individuals aged 18 or above and was conducted in both English and Spanish. To ensure a representative sample, quotas on demographic characteristics were established. The final analytical sample included a total of 2,527 participants, representing a reasonably representative sample of Texas adults when compared to the Census Bureau's American Community Survey 2020.¹

To confirm whether the survey responses for specific questions of interest differed across gender, researchers used Pearson's chi-square test for homogeneity of proportions. When there was only one degree of freedom (i.e., only two comparison groups), researchers used Yates' continuity correction. The results of this analysis based on gender are presented below.

3. Findings

Survey participants were given several options for changes to shared-ride services relating to operational improvements, government policies, and employer programs that would make them personally more likely to use those services. [Table 1](#), [Table 2](#), and [Table 3](#) summarize the differences in responses by gender including the respective sample counts and proportions for each group, the $\chi^2(k-1)$ test statistics, and the corresponding p-values.

¹ For more information on the larger study and the survey, please see: https://nicr.usf.edu/2022/01/20/2-2-2_examiningondemandtransportation/

Table 1. Gender Differences Regarding Operational Improvements to Shared-Ride Services.

Operational Improvement	Count		Proportion		χ^2 - statistic	p-value
	Male	Female	Male	Female		
Designated boarding zones	149	154	0.140	0.107	5.993	0.014
Guaranteed time window	294	443	0.267	0.308	2.742	0.098
Guaranteed limit on additional stops	264	434	0.248	0.301	8.373	0.004
Financial reimbursement if trip goes past the estimated travel time	274	446	0.258	0.310	7.887	0.005
Priority preference option	177	204	0.166	0.142	2.702	0.100
Sequential drop-offs in order of boarding	161	209	0.151	0.145	0.140	0.709
Viewable names, genders, and ages of other passengers	174	260	0.164	0.181	1.121	0.290
Viewable pictures of other passengers	170	242	0.160	0.168	0.248	0.618
Preference option for gender of other passengers	156	265	0.147	0.184	5.859	0.016
Rating option for passengers/viewable ratings of other passengers	195	242	0.183	0.168	0.880	0.348
Company vetting of other passengers	203	234	0.191	0.162	3.206	0.073
Match option with other passengers from a trusted network	206	271	0.194	0.188	0.084	0.772
Current location broadcasts during a trip to a trusted person	224	379	0.211	0.263	8.998	0.003
On-call concierge number or helpline	200	298	0.188	0.207	1.266	0.260
Formal code of conduct for passengers	240	333	0.226	0.231	0.082	0.774
Onboard video surveillance	258	414	0.242	0.288	6.089	0.014
None of the above would make me more likely to share a trip with a stranger	111	239	0.104	0.166	18.832	<0.001

From [Table 1](#), at the 0.05 significance level, the difference in proportions for males and females was found to be significant for a variety of different operational improvements (nonbinary and third-gender individuals were excluded due to a small sample size that produced zeroes for certain categories). Females were significantly more likely to want to set a preference for the gender of other passengers in a shared vehicle, confirming that a gender-dedicated system might be more popular among women than a gender-free system for choosing passengers (Sarriera et al. 2017; Tang et al. 2021). Broadcasting the vehicles' current location and having video surveillance on board were both found to make females feel safer in a shared ride. Females were also more concerned than males about trips taking too long, with a higher proportion wanting guaranteed limits on additional stops and financial reimbursement for excessively long trips.

Looking at [Table 2](#), all but two of the potential government policies for shared-ride services were significant at the 0.05 level. The sharpest differences between males and females related to wide-ranging policies, including priority traffic signals for pooled vehicles, tax advantages, and regulating user data. Males were primarily focused on financial incentives from the government to make them more likely to share a ride, such as pretax benefits, direct subsidies, and

Table 2. Gender Differences Regarding Government Policies for Shared-Ride Services.

Government Policy	Count		Proportion		χ^2 - statistic	p-value
	Male	Female	Male	Female		
Creating designated boarding zones at busy intersections/curbside areas	201	204	0.189	0.142	9.727	0.002
Improving sidewalks and intersections at key destination areas	219	234	0.206	0.162	7.462	0.006
Implementing surveillance and security at designated boarding zones	264	417	0.248	0.29	5.105	0.024
Reducing local traffic speeds to improve safety for pedestrians	162	174	0.152	0.121	4.933	0.026
Adding high-occupancy lanes or priority lanes for pooled vehicle travel	201	221	0.189	0.153	5.234	0.022
Providing traffic signal priority for pooled vehicle travel	164	142	0.154	0.099	17.072	<0.001
Allowing for pretax benefits to be used for shared-ride trips	169	171	0.159	0.119	8.04	0.005
Providing a direct subsidy to users who take shared-ride trips	199	218	0.187	0.151	5.346	0.021
Creating tax advantages for employers who have shared-ride programs	197	188	0.185	0.131	13.6	<0.001
Regulating private transportation providers to report safety incidents within shared-ride vehicles	195	293	0.183	0.203	1.465	0.226
Regulating private transportation providers to make service more available in my community	187	201	0.176	0.14	5.84	0.016
Regulating the sale or use of data generated from apps	204	192	0.192	0.133	15.237	<0.001
Regulating fixed fares between more destinations	228	327	0.214	0.227	0.509	0.476
Creating better service connections to rail or bus transit service hubs	238	262	0.224	0.182	6.412	0.011
Subsidizing the cost of shared-ride trips that connect to transit hubs	253	283	0.238	0.197	5.947	0.015
None of the above would make me more likely to share a trip with a stranger	138	351	0.13	0.244	49.924	<0.001

subsidizing certain trips that connect to other transportation hubs. Females were once again concerned with safety, including surveillance and more open reporting of safety incidents.

As seen in [Table 3](#), employers had far fewer options to incentivize sharing a ride. There was no statistically significant difference across gender regarding implementing surveillance and security at designated boarding zones as an employer program, likely suggesting that efforts to improve safety and security are considered as a responsibility of operational improvements and government policies rather than their employers. Males were again primarily concerned about financial incentives, with direct subsidies and a parking cash-out program much more likely to influence them than females. Males were also more likely to want flexible working hours as a way to incentivize them to use shared-ride services. Although surprising given that previous polls have found that females prioritize flexible working hours and locations more than males (Comoglio and Benditt 2021), this finding may be attributed to the fact that females tend to bear a higher share of household chores (Brenan 2020)

Table 3. Gender Differences Regarding Employer Programs for Shared-Ride Services.

Employer Program	Count		Proportion		χ^2 - statistic	p-value
	Male	Female	Male	Female		
Creating designated boarding zones at my workplace	218	231	0.205	0.16	7.923	0.005
Implementing surveillance and security at designated boarding zones	291	420	0.273	0.292	0.906	0.341
Partnering with on-demand service providers to improve service availability at their locations	221	262	0.208	0.182	2.446	0.118
Creating rewards programs for taking shared-ride trips	348	484	0.327	0.336	0.187	0.666
Providing a direct subsidy for taking shared-ride trips	283	257	0.266	0.178	27.185	<0.001
Providing a parking cash-out program for taking shared-ride trips	233	263	0.219	0.183	4.862	0.027
Creating programs for sharing rides with other coworkers or known networks of people	259	344	0.243	0.239	0.046	0.830
Providing a guaranteed ride home program as a backup transportation option	305	411	0.287	0.285	0.001	0.982
Permitting flexible working hours for commuting to/from work	315	359	0.296	0.249	6.562	0.010
Permitting flexible work-from-home schedules for some days during the week	277	351	0.26	0.244	0.81	0.368
None of the above would make me more likely to share a trip with a stranger	143	344	0.134	0.239	41.979	<0.001

and caregiving responsibilities (Botek 2022). Furthermore, a global TNC study revealed that women tend to use ride-hailing services for a variety of household management and social trips, while men use them more for commuting and business purposes (IFC, 2018).

The starkest difference was in the proportions of males and females who said they would not share a ride, irrespective of changes to the systems and potential improvements. The hesitancy of females about sharing rides with strangers is understandable considering they are more at risk from assault, harassment, and exploitation as noted earlier. Effective policy recommendations that prioritize safety require a nuanced approach that considers women's experiences and concerns, rather than placing the burden of responsibility on them to change their behavior. If policies succeed in addressing these issues, the increased number of women using shared-ride services and improved perception could also change the attitudes of those who previously said they would never share a ride.

Acknowledgments

This work was supported by the National Institute for Congestion Reduction (NICR) and funded by the U.S. Department of Transportation Office of the Assistant Secretary for Research and Technology University Transportation Centers Program under Grant No. 69A3551947136. The contents of this

paper reflect the views of the authors, who are responsible for the facts and the accuracy of the information presented herein. The authors thank two anonymous reviewers for their insightful feedback.

Submitted: March 19, 2023 AEST, Accepted: April 11, 2023 AEST



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